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ABSTRACT OF THE DISCLOSURE

A series of modular panels interconnected by means of mechanical fasteners oriented in such a way as to unfold into components for a shelter which are easily and quickly assembled or disassembled.

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Disclosure

The present invention relates to a series of modular panels mechanically interconnected to form the components of a portable shelter, which is easily assembled for use or taken down for storage or transport.

Various types of portable shelters are known. One type is made of canvas or other cloth material and is known as a tent. Tents are an excellent basic shelter which the present invention improves upon by offering more comfort in extreme weather conditions.

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Another type of portable shelter is the Recreation Vehicle. An R.V. is expensive to purchase and in most cases must be licenced and insured before using. Some R.V.'s necessitate a vehicle for towing and may be considered awkward in some driving conditions. Many secondary and lesser travelled roads are impassable to the R.V. class of shelter.

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The present invention relates to a portable shelter system that is easily set up once a site is chosen. It is extremely light and portable and fits readily into a standard pick-up truck or station wagon. The shelter system is not expensive to purchase and has a wide variety of uses. It gives excellent protection in severe weather and can easily be heated.

One use for the shelter system is as an emergency shelter in the event of a natural disaster. A dormitory style shelter could be assembled to accommodate large groups. Such a shelter would consist of a series of modular panels that could be extended by adding more modular panels to the walls and roof, limited only by suitable space for a shelter.

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This shelter system also meets the needs of many outdoorsmen. In many jurisdictions the construction of cabins for temporary shelter has been prohibited, such as trapline, and guide outfitter camps.

This shelter system provides a solution to these needs. A suitably sized shelter is taken to the chosen area by the user and is set up for the duration of the stay. Upon leaving the area the shelter is disassemble and taken out, leaving the area unharmed. This allows the user to have a suitable shelter in any location as needed, when needed, with minimum impact on the areas ecology.

Due to the light weight and reasonably compact portability, combined with simplicity of assembly and disassembly, such a shelter would be very usefull to the exploration industry. The shelter could be loaded into or strapped onto a helicopter and moved from location to location. This would result in economic savings to the companies involved, as many camps of a conventional nature are abandoned or burnt.

Using four feet as a common module, the shelter system will be made in a variety of sizes, from 8'x 8' up to 16'x 16' or larger. Minimum wall height will be 6'. All shelters will be built with a door and window being an integral part of the wall system.

By design the portable shelter lends itself to a variety of sizes which require a different number of modules depending on the size of the shelter. For example a 8'x 8' shelter would only require 1 floor module where a 16'x 16' shelter would use 2 floor modules to allow for ease of handling.

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By using rigid foam insulation it is possible to have walls only 1 1/2" thick while maintaining an insulation factor of R-7.

The modular sections will be quickly and stably locked together upon assembly by use of integrated hardware so nothing can be lost.

The overall package size for the shelter system is no larger than 4'x 8' with the thickness varying, depending on the number of panels used to achieve the required shelter size.

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Preliminary tests have shown that set up time, including installing a wood burning stove and bunk beds to be under an hour. Conditions included -20 degree night time temperatures and heavy snows. This was a 12 x 12 shelter used by 2 adults.

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Summary of drawings.

Figure 1 is a plan view of a floor module.

Figure 2 is an end view of each half of a floor module.

Figure 3 is a plan view of the completed floor module with the wall modules being set up.

Figure 4 is a plan view with the wall modules being moved into place.

Figure 5 is a completed shelter.

Figure 6 is an exploded view of the components used.

Figure 6 A is a view of two modules joined together.

Figure 7 is a view of the final joining of modules.

Figure 8 is telescopic beam.

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How to use the "Portable Shelter System"

The pre-oriented modules assemble quickly and easily following a pre-described sequence.

Figure 1

- 1/ Place the floor module (A) on edge and unfold by rotating half the panels 180 degrees.

Figure 2

- 2/ Lay the opened out module flat and extend the pre-oriented panels of each half perpendicular to the jointed panels until all panels lay flat.
- 3/ Lock panels together with attached hardware.

Figure 3

- 4/ Stand a pre-oriented wall module (B) on the assembled floor (A) and unfold leaving the panels in a zig zag along one edge of the floor so as to be self supporting.
- 5/ Add a second module of wall panels by attaching the last panel of the first module \B1/ to the first panel of the second module \B2/ using the attached fasteners.
- 6/ Continue in this manner until all wall modules are in use and form a square or rectangle as required by the model in use.

Figure 4

- 7/ Beginning in one corner, align the corner of the walls (B) with the corner of the floor (A) and continue around the walls making the outside of the panels flush with the outside of the floor.

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Figure 5

- 8/ Lock the wall panels to the floor using the attached hardware.
- 9/ Assemble and place the beam members (C) in pre-formed beam pockets if used in that model.
- 10/ Unfold and place pre-oriented roof panels (D) on top of walls and beams.
- 11/ Straighten tops of walls (B) and lock roof modules (D) in place with attached hardware.
- 12/ Disassembly is in reverse order.

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Figure 6, 6 A

The present invention consists of a series of modular panels each constructed of rigid foam insulation \1/ bonded to inner \3/ and outer skins \5/ and surrounded by a frame.\7/

The panel frames \7/ are interconnected by means of a mechanical hinging device \9/

The hinging device \9/ is protected by a wrap around weather strip \11/

10 Standard weather strip \13/ is present between panels.

Hinging devices \9/ are fastened to the frames by mechanical fasteners \15/ which may comprise of screws or pop rivets.

Figure 7

The final joining of the wall subassembly is accomplished by joining the first panel in the sequence to the last panel in the sequence by means of a mechanical fasteners \17/ which may be a clamp or hasp of sorts.

20 Subsequent to wall assembly to roof panels \D/ are unfolded and attached by means of mechanical fasteners \17/ which may be clamps, hasps, or other quick release mechanical fasteners.

Figure 8

Larger sizes of structures may require additional roof support in the form of a beam system \C/ which may be folded or telescopic in nature.

Inventor

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THE EMBODIMENT OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS.

1/ A PORTABLE SHELTER SYSTEM COMPRISING;

A series of modular panels interconnected by means of mechanical devices, so as to fold up for transportation or storage, or to unfold for use.

2/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 1/, wherein the modular panels are interconnected by means of specifically oriented mechanical hinging devices so as to fold in a specified direction only.

3/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 2/, wherein any number of modular panels are interconnected by means of mechanical hinging devices to allow for various sizes of shelters.

4/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 2/, wherein the method of orienting the mechanical hinging devices determines the geometry of the shelter.

5/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 2/, wherein the method of orienting the mechanical hinging devices enables the modular panels to fold or unfold in an accordion like fashion for storage or erection.

6/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 1/, wherein modular panels are constructed from rigid foam insulation enabling the panels to be light in weight and well insulated.

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7/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 6/, wherein modular panels have an interior and exterior skin which encases the insulation and adds rigidity to the panel and may be of metal, plastic, or other rigid material.

8/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 6/, wherein metal, wood, or other rigid material surrounds each panel to add rigidity and to provide an anchor point for mechanical hinging devices and fasteners.

9/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 8/, whereby a mechanical hinging device is used as a method of connection between adjoining panels and enables panels to be folded for storage or use.

10/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 1/, wherein the engagement of a series of mechanical fasteners connects the final joints completing the series of interconnected panels which form the walls of a shelter.

11/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 1/, wherein a series of interconnected panels form the roof and are fastened to the walls by means of engaging mechanical fasteners.

12/A PORTABLE SHELTER SYSTEM AS CLAIMED IN 1/, wherein the disengagement of a series of mechanical fasteners allows the roof section to be removed and folded for transport or storage.

13/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 1/, wherein the disengagement of a series of mechanical fasteners allows the wall modules to be folded for transportation or storage.

14/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 3/, wherein a system of roof support may consist of a beam system or support of the wall panels or a combination of both.

15/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 14/, wherein a beam system may be either foldable or telescopic.

16/ A PORTABLE SHELTER SYSTEM AS CLAIMED IN 14/, wherein the beams may be constructed of wood, metal, or other rigid material, exclusively or in combination.

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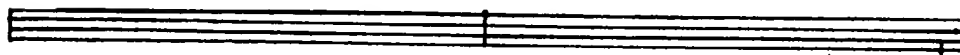
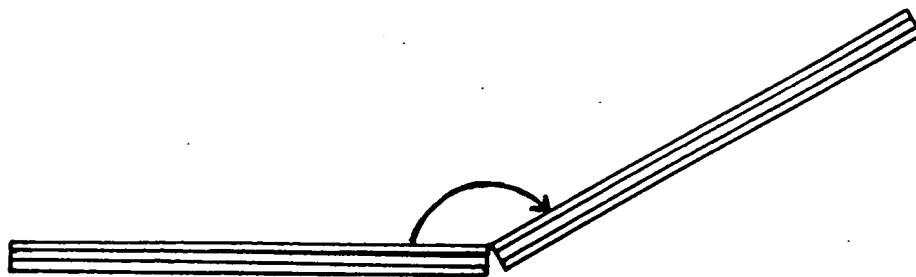
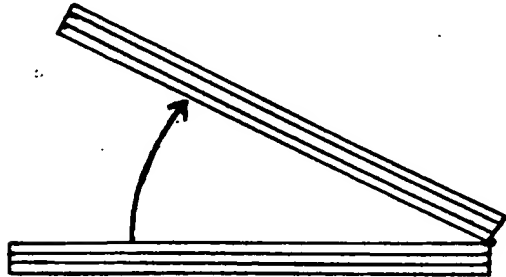


FIGURE 1

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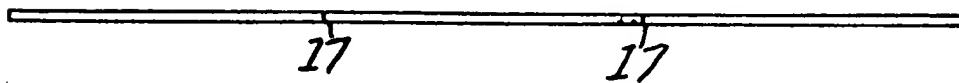
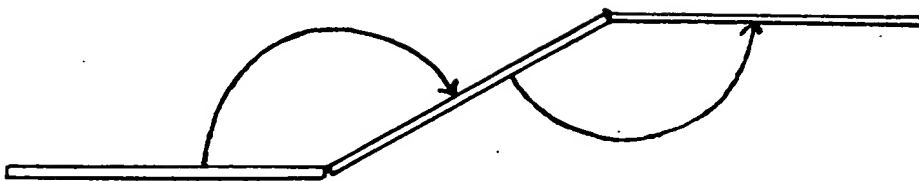
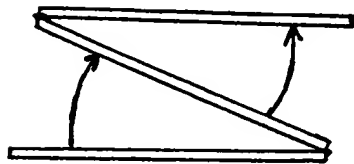
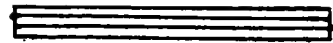


FIGURE 2

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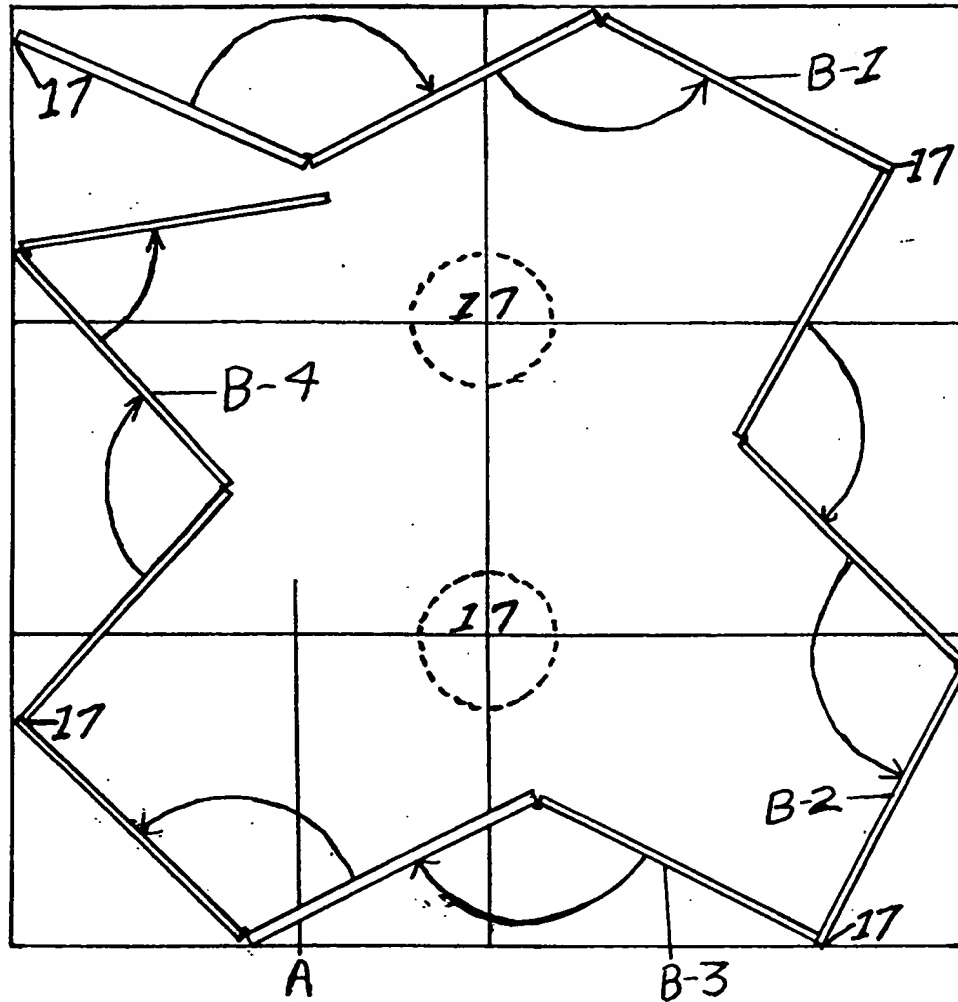


FIGURE 3

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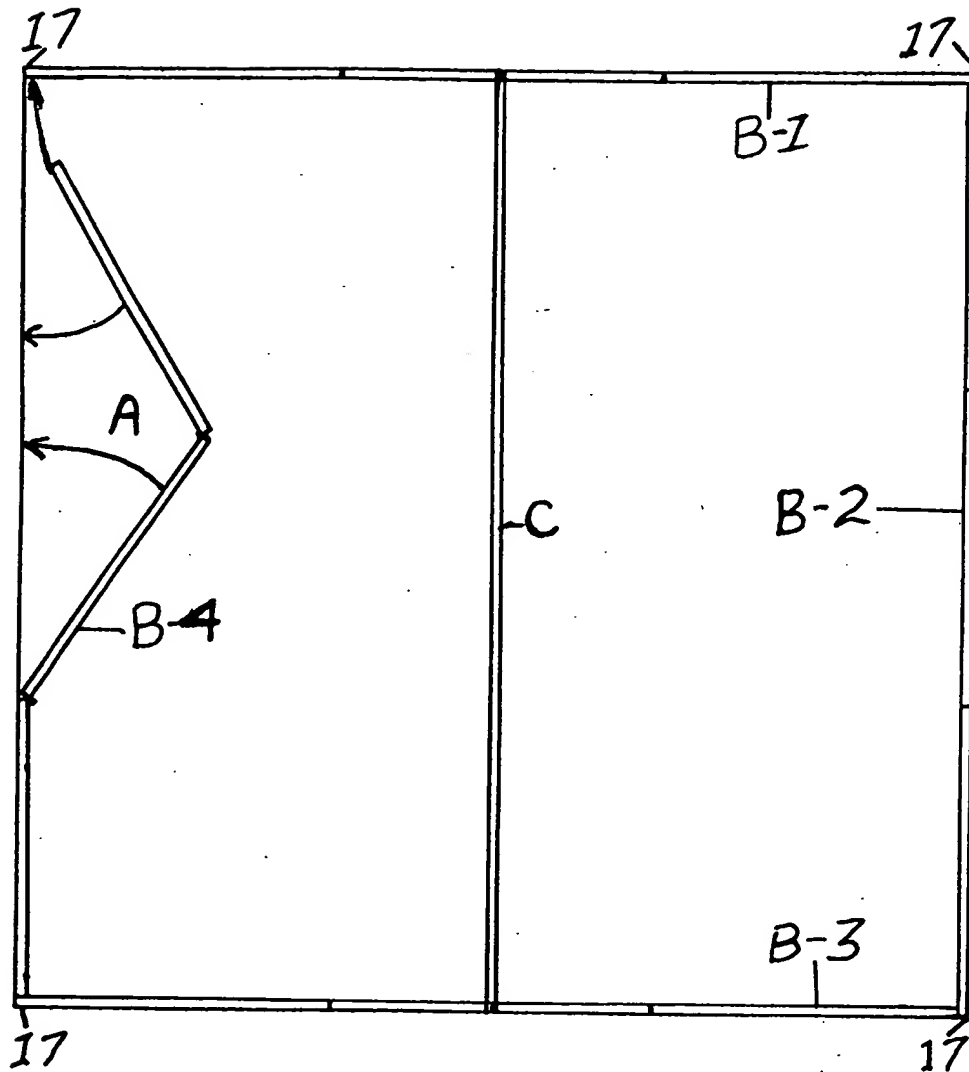


FIGURE 4

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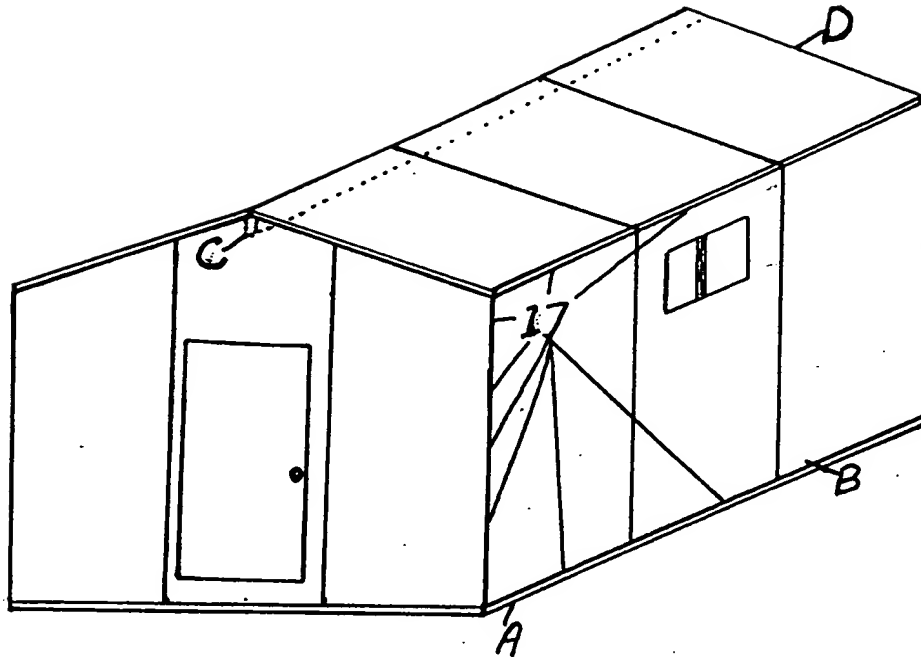


FIGURE 5

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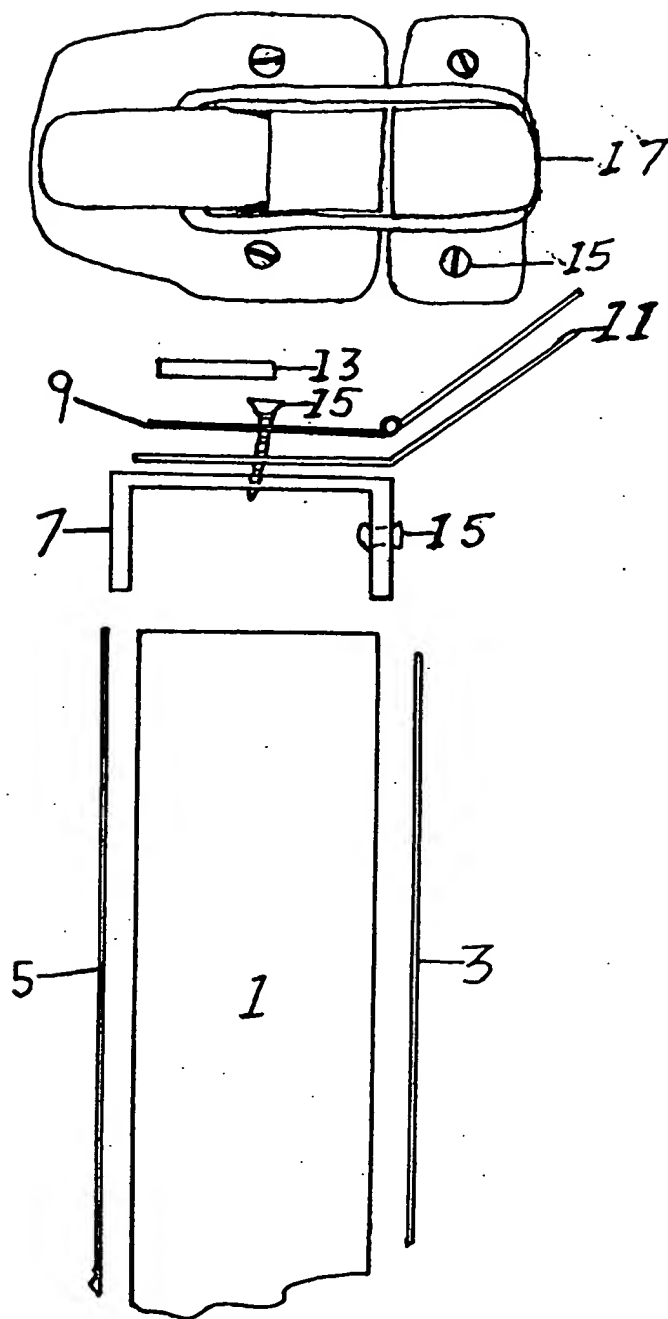


FIGURE 6

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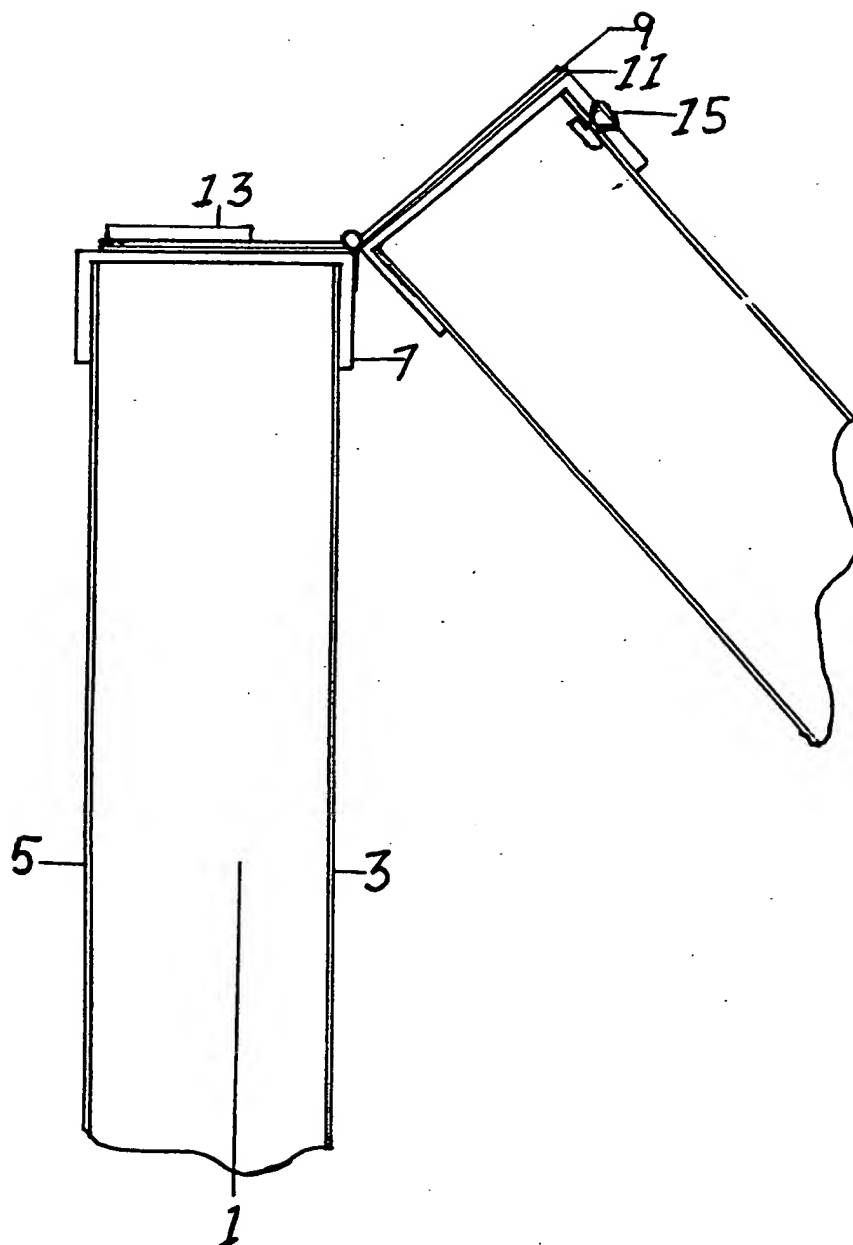


FIGURE 6A

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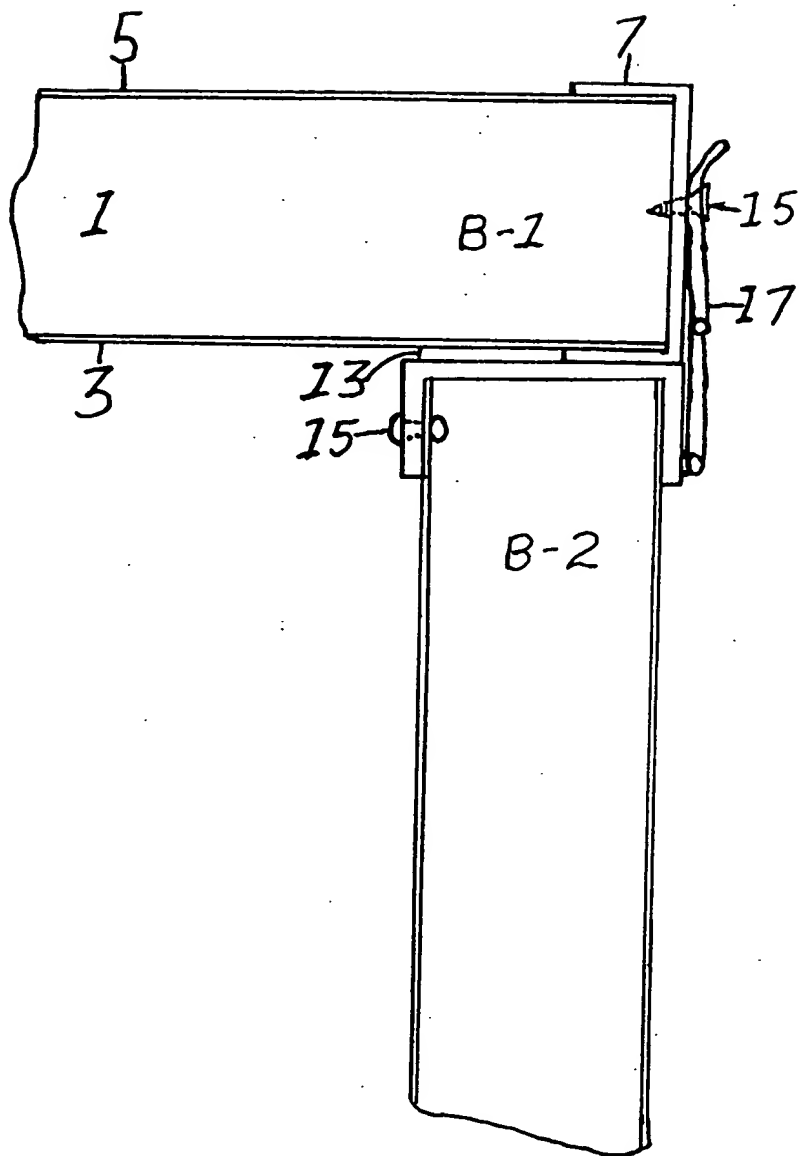


FIGURE 7

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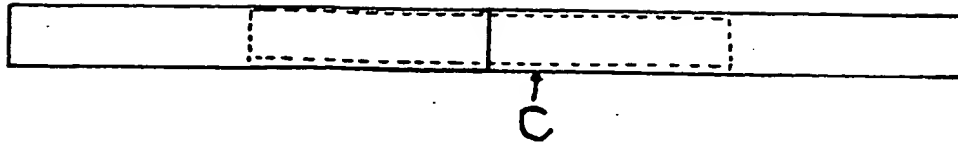


FIGURE 8

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